

## Section VI. Schedule of Supply

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## 1.0 List of Goods and Related Services.

Item	Description	Unit	Quantity
1	Water Tanker-4000 Litres Capacity	No.	1
2	Fire Fighting Equipment	No.	6
3	Road Sweeping Machine	No.	1
4	Hydraulic Baling Press	No.	2
5	Open Nala Desilting Machine	No.	1
6	Tipper – 3.00 cum load body capacity	No.	1
7	Truck mounted Slurry Tanker - 3000 Litres Capacity	No.	1

## 2.0 Delivery and Completion Schedule

The delivery period shall start from the date of detailed supply order after signing of contract agreement.

Item No.	Description of Goods or Related Services	Delivery Schedule (Duration)	Location	Required Arrival Date of Goods and Completion Date for Related Services
1	Supply, transportation, local handling, delivery, installation and trial run at site with all accessories of vehicles and Equipment complete as above.	i). Twelve (12) months Staggered and as per approved delivery Schedule. Wherein the successful bidder shall submit detailed delivery schedule for approval.	Shillong	Within 365 <b>days from the date of work order;</b>

## 3.0 Technical Specifications

### 3.1 Preamble

The North Eastern Region Capital Cities Development Investment Program (NERCCDIP), financed by Asian Development Bank (ADB), includes a phased scheme for developing the basic infrastructure facilities in Shillong of Meghalaya state. The program includes Development

of Solid Waste Management including development of landfill site and solid waste collection in the city area and laying of sewerage collection system and waste treatment facility, for Shillong. To supplement the solid waste collection system, Government of Meghalaya intends to procure different types of vehicles and equipment under the program for which the present bid document is referring to.

### **3.2 Scope of Work**

The scope of work under this contract package includes:

Design, manufacturing, fabrication, assembling, testing at manufacturing works, delivery, installation, trial run, testing, commissioning and satisfactorily handing over to end user including routine and preventive maintenance for a period of 12 months of Vehicles and equipment of following capacity and quantities, including necessary accessories, local handling, inland transportation, insurance and training of personnel etc complete in all respect.

1. Water Tanker - 4000 Litres Capacity
2. Fire Fighting Equipment
3. Road Sweeping Machine
4. Hydraulic Baling Press
5. Open Nala Desilting Machine
6. Tipper – 3.00 cum load body capacity
7. Truck mounted Slurry Tanker - 3000 Litres Capacity

### **3.3 Specifications for Vehicles and Equipment.**

#### **3.3.1 Codes and Standards**

All requirements of the latest Indian Traffic Rules/Acts and any other statutory rules and regulations in force shall be strictly adhered to.

It shall be responsibility of the bidder to procure the vehicle full filling all the requirement of transportation rule and obtain the insurance as required and compulsory.

It shall be the responsibility of the bidder to obtain necessary approval from the concerned inspecting authority and shall furnish necessary documentation for the same.

It shall be the responsibility of its bidder to obtain vehicle registration from the entire concern department to operate the vehicle.

Vehicles and equipment shall be designed and tested to relevant Indian Standard and /or ISO, American, British or equivalent standard and code of practice.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement.

For all the equipment list of mandatory spare parts shall be provided and shall provide two sets of all the mandatory spare parts.

### 3.3.2 General Parameters

The intended vehicles and equipment shall be of approved make conforming to the requirements of relevant IS/BS. General requirement are specified in subsequent section.

### 3.3.3 Water Tanker-4000 litres capacity

- ENGINE : 55.2 Kw (75 PS) at 3050 rpm or equivalent
- Maximum Engine Output :125 Ps @ 2400 rpm or equivalent
- Maximum Torque :400 Nm @ 1300-1500 rpm or equivalent
- Clutch : Single plate dry friction type or equivalent.
- Brakes :Dual circuit full air S-cam brake or equivalent
- Suspension :Leaf spring at Front and Rear
- Shock Absorbers :Hydraulic double acting telescopic type at front and rear
- Tyres :7.50x16, 16PR (Ply Rating) or equivalent
- Minimum Turning Circle Dia. (m) :13.5

### Specifications (for Rear Body) Water Tanker

- Capacity : 4000 litres.
- Shape : Elliptical
- Tank : Will be elliptical in cross section of 5.00mm mildsteel plate and electrically welded throughout. Machine pressed dished ends.
- Dimensions : 3560 mm x 1770 mm x 820 mm (Approximately)
- Baffles : Adequate transverse baffles will be fitted
- Material : 5 mm thick mild steel plate.
- Manhole : One 530 mm diameter manhole with a quick release hinged screw type clamped lid and situated at the highest point of the tank. Rubber seal in the form of a rubber ring which is to be secured to manhole flange.
- Outlet : 75mm outlet at the lowest end of tank.
- Overflow & Air Inlet : At the highest end of the tank for access to the manhole.
- Ladder : A tubular ladder will be fitted to the tank for access to the manhole.
- Valve Arrangement : Fill tank from reservoir.

	: Empty tank with direct outlet.
	: Pump and fill other tanks.
	: Bypass water through pump to tank.
Hose Bracket	: Hose brackets for one 6 meter armoured suction hose that will be supplied with the tank and a 75mm foot valve fitted to suction hose.
Cradle Mounting	: The tank will be mounted on a continuous sub frame with Rubber mounted cradle mountings to petrol tanker regulations for heavy duty off road conditions.
Longitudinal Mounting	: The tank will be mounted on two longitudinal runners and the whole unit 'U' bolted to the chassis with balata belting between the chassis and the runners. The tank will have 75mm fall to the rear for easy and complete discharge.
Interior of Tank	: Will be cleaned with dioxidine, then painted with two coats of anti-corrosive bitumenastic paint.
Exterior of Tank	: Will be thoroughly ground and sanded in preparation for painting, followed by zinc chromate primer and finished off with two coats of synthetic enamel.
Mudguards	: Mudguards will be fitted over the rear wheels of the chassis.
Pressure Relief Valve	: As an extra.
Pumping Arrangement	: 8.00 HP pump set shall be provided at rear end of the tanker for filling the water.

The above are the general minimum requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

Note- One such water tanker is available at SMB office (vehicle no. ML05F 4768) for guidance.

The bidders are requested to inspect the same before quoting.

### 3.3.4 Fire Extinguisher

- Type- CO2 Type, Trolley Mounted
- Capacity- 22.5 kgs.

General-conforming to IS2878 made from seamless cylinder conforming to IS 7285 duly approved by Chief Controller of Explosive, Nagpur, fitted with ISI marked controlled valve conforming to IS 3224, high pressure 5 mtr. Long discharge hose and horn complete with initial gas charged mounted on trolley wheels.

**Other Details**

IS specification No	: 2878
Capacity	: 22.5 kgs
Testing Pressure	: 335 Kgf/cm <sup>2</sup>
Working Pressure	: 140 Kgf/cm <sup>2</sup>
Approximate Jet Range	: 2.5 to 3.0 m
Minimum % of discharge	: 97
Temperature Range (0 C)	: 0 - 55 degrees
Empty Weight in kgs. (approx.)	: 42-46.5
Full weight in kgs. (approx.)	: 64.5-69
Valve	: Brass Forged IS 3224
Body Material	: ISI Mark (ISI: 7285)

The above are the general minimum requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

**3.3.5 Road Sweeping Machine.**

- Type-self propelled, Diesel Engine Operated suitable for sweeping of Municipal Small Roads, parking and paved areas.
- The machine shall be a self propelled unit and shall be provided with an Auxiliary Diesel Engine. The hydrostatic drive system shall give the vehicle a travel speed of 20 Km/hr.
- The machine shall be compact and suitable for small, narrow and steep hilly area roads.
- The machine shall have a container capacity of 800 litres. And sweeping width of 2000mm
- The machine shall have easy movement in restricted spaces.

Sr.No.	Item	Description
1	Application	Cleaning of Municipal and Industrial Plant roads, Parking areas and other paved areas.
2	Type	Ride on
3	Engine	
3.1	Power	70H.P.
3.2	Number of Cylinders	4
3.3	Engine cooling	Water cooled
3.4	Battery	12V, 100 Ah

<b>Sr.No.</b>	<b>Item</b>	<b>Description</b>
4	Frame	
4.1	Material of Construction	High tensile steel
5	Sweeping System	One main brush with two side brushes
5.1	Main Broom	Diameter 400mm, Length 1270mm, Quantity 1 No.
5.2	Side Brushes	Diameter 600mm, Quantity 2 Nos.
5.3	Cleaning width Main Broom and Two Side Brushes	2000mm, with main Broom and Two side Brushes
5.4	Operation of Brushes	Through individual Hydraulic motors using power from Hydraulic pump. All the Brush operations are controlled from the Driver's Cabin.
5.5	Sweeping Speed	0-10 km/Hr.
6	Drive System	
6.1	Drive of Sweeping machine	Hydraulic Motor
6.2	Tipping	Hydraulic
7	Hopper	
7.1	Volume	800 Ltrs.
7.2	Dumping Height	1650mm
7.3	Tipping Operation	Hydraulic Actuated Discharged door locking/unlocking, door lifting/ lowering and tipping
8	Suction System	
8.1	Fan Centrifugal	Centrifugal Blower
9	Dust Control System	The air borne dust in the dust hopper is sucked through a blower and is filtered through the bag filter system and clean air is exhausted in to the atmosphere.
9.1	Filter Type	Imported Pleated Fabric filter.
9.2	Filter Cleaning	Reverse compressed air jet purging
10	Indicators in Panel	
10.1	Engine Oil Pressure	To be Provided
10.2	Engine Cooling Liquid	To be Provided

Sr.No.	Item	Description
	Temperature	
10.3	Fuel Gauge	To be Provided
10.4	Operating Hour meter	To be Provided
11	Painting	Automotive paint
12	Cabin	An All weather Driver's Cabin with Excellent Operator visibility.
13	Steering	Rear Wheel Steered hydraulically
14	Braking System	
14.1	Main Brakes	Front Wheel:- Hydraulic actuated Braking Shoe on Brake Drum Rear Wheel: - Hydrostatic Braking.
14.2	Parking Brakes	To be Provided
15	Overall Dimensions	
15.1	Length	3100mm (approx)
15.2	Width	2000mm (approx)
15.3	Weight	3600 kg (approx)
16	Salient Features	(1) Machine capable to undertake dry sweeping without necessity to spray water as pleated fabric bag filters (meeting PM - 10 norms) are provided with continuous cleaning arrangement in machine. (2) Machine Powered with an Indian diesel engine, and incorporating latest international – electro hydraulic system, (3) Mechanical sweeping by Brushes (4) Rugged machine, Specially designed for high ambient temperature and heavy dust loads prevalent in India.

The above are the general minimum requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

### 3.3.6 Hydraulic Baling Press

Parameters	Dimensional Units	Dimensions/Values
Bale Size	l x w x h	3' x 1.75' x 1.5'
Bale Weight	Kg	40 - 50
Production Capacity***	bales / hour	5 - 8
Main Press Cylinders Tonnage	Tons	35
Cylinder – Main	mm	150Ø x 90Ø x 1400 – 1 no
Pressure	bar	199
Bale Removal Door – Close & Open		Manual – cam operated
Electric Motor	HP	5
Oil tank	l	150

The above are the general minimum requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

### 3.3.7 Open Nala Desilting Machine.

The open nala desilting machine has the following main components:

- a) Trailer Chasis Tipper Body
- b) Hydraulically/operated de-silting equipment,
- c) Controls, and
- d) Hydraulic Power Transmission system and Drive

#### Construction Details

Construction:	Fully electrically welded, M.S Fabricated, with heat treated alloy steel pins.
Bucket Volume	30Kg/0.03 cum
Maximum Bucket Width	0.25 m
Maximum outreach	3.3 mtrs
Maximum operating depth below ground level	Upto 1.5mtrs
Slewing Angle	100 °
Stabilizer Units	1 no hydraulically operated, on one side, at tow bar and a suitable counter/ weight on side opposite to that of the hydraulic stabilizer.

The Complete equipment will be mounted on a Tractor Towed Trailer Chasis which will be capable of being towed by a Tractor having a minimum output rating of 35HP.

**a) Trailer Chasis**

The un-sprung suspension, trailer chassis will be manufacture from ISMC sections of 100X50mm, and 75X40mm and will be of an electrically welded construction.

The tow bar will be all electrically welded, and fabricated out of two ISMC box sections. An all forged, spring loaded steel tow eye, and a retractable stand will be fitted on the tow bar.

Construction Features	1. Single axle, un-sprung suspension.
	2. Wide will base and a low centre of gravity to ensure optimum dynamic road stability.
	3. Provided with two internally expanding type hand operated parking brakes.

**Technical Data**

Length	2440mm (approx.)
Width	1830mm (approx)
Height	450mm (approx)
Tyre size	7.50X16X2 nos or equivalent.

**b)Tipper Body**

Configuration	All Steel Welded , Box Type (Open Top)
Panel thickness	
Bottom	3.0 mm
Sides	1.6 mm
Rear	1.6 mm
Tipping Angle	40° Approximate

**Hydraulic Operated Desilting Equipment**

The basic components are:

- The Boom
- The Dipper stick, and
- The Bucket

The boom, dipper stick and the bucket are of an all electrically welded construction and are fabricated from structural steel plate confirming IS 2062 'A' standards. The bucket comes fitted with hardened teeth to facilitate excavation of dried and harden silt.

The whole configuration articulates over suitably size hardened and ground hinge pins manufactured alloy steel. The structure is mounted on a turret, which allows for its slewing through an angle of approximately of 100°. The complete unit is further fitted on a suitable dimensioned telescopic type lateral side arm of a robust design, and is on the left hand side of

the vehicle. The side arm is capable of being extended by 600mm outside the width of the chassis.

Operation of the boom, Dipper stick, Bucket and Turret, independent of one another and are affected hydraulically using a configuration having suitably design double acting cylinders.

### **Controls**

All control lever to engage and disengage the hydraulic power plant as also the hydraulic direction control valves are housed commonly and in a convenient position in the Control Cabin.

### **Hydraulic Power Transmission System and Drive**

A hydraulic pump of adequate capacity to meet the operational requirements of the complete system shall be provided with the equipment.

Drive to the hydraulic pump will be tapped from the tractor PTO which will drive the tow- bar tow bar mounted hydraulic pump through a specially designed articulating type shafting arrangement. Engaging and disengaging of the PTO shall be from the Tractor's Control Cabin.

The hydraulic system will be a combination of high- pressure seamless pipes and flexible hoses, to facilitate easy field replacement/ repairs.

### **System's Details**

Type	Gear pump
Flow at Rated speed	Minimum 27 LpM
Pressure	150 bar
Return line filter	25 Microns
Suction Filter	125 Microns
Total nos. of cylinders	5 Nos. inclusive of 1 no. Stabilizer cylinder

### **Painting and Surface Finish**

The equipment will be thoroughly sanded and spray –painted with two coats of superior quality, anti-corrosive primer and two coats of enamel metal paint of a reputed make.

The colour shade will be that of the customer's choice.

The above are the general minimum requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

**3.3.8 Tipper – 3.00 cum load body capacity.**

Engine	
Type	Water-cooled direct injection diesel
Max engine output	75 HP @ 2800 rpm
Max torque	225 Nm (22.9 mkg) at 1500-1800 rpm
Capacity	2956 cc (approx)
Emission norms	Euro II
Type	Semi elliptical leaf spring at front and rear with auxiliary springs at rear
Shock absorber	Hydraulic double acting telescopic type at front and rear
<b>Brakes</b>	
Service brake	Vacuum assisted dual circuit hydraulic with tandem master cylinder or equivalent
<b>Clutch</b>	
Type	Single plate dry friction type or equivalent
Vehicle performance	
Minimum turning circle diameter in mm	10.2

The above are the general minimum requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

**3.3.6 Truck mounted Slurry Tanker -3000 Litres Capacity**

<b>Engine</b>	
Type	Water-cooled direct injection diesel engine
Max engine output	75 HP at 2800 rpm
Max torque	225 Nm (22.9 mkg ) at 1500 -1800 rpm
Capacity	2956 cc (approx)
Emission norms	Euro II
<b>No of Suspension</b>	
Type	Semi elliptical leaf spring at front and rear with auxiliary springs at rear

Shock absorber	Hydraulic double-acting telescopic type at front and rear
<b>Frame</b>	
	Ladder type frame with riveted / bolted cross members, side members are of channel section, depth: 180 mm (max), width : 55 mm
<b>Brakes</b>	
Service brake	Vacuum-assisted dual circuit hydraulic with tandem master cylinder or equivalent
<b>Clutch</b>	
Type	Single plate dry friction type or equivalent

### **Specifications (for Rear Body) Slurry Tanker 3000 Litres Capacity**

Effective Capacity	3000 litres.
Shape	: Elliptical
Tank	: Will be elliptical in cross section of 5.00mm mildsteel plate and electrically welded throughout. Machine pressed dished ends.
Dimensions	: 2200 mm x 1500 mm x 1220 mm (Approximately)
Material	: 5 mm thick mild steel plate.
<b>Exhauster Compressor</b>	
Type	: Rotary Sliding Vane
Vacuum	: 80 to 90%.
Displacement	: 4500 LPM
Positive Pressure	: 2.0 Bars
Safety Features & Vacuum Pressure Relief Valve	: 3 Stage Filtration is provided

The above are the general minimum requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

#### 4.0 Operation and Maintenance Manual

The supplier before commissioning of procured goods under this contract shall submit 6 (six) copies of the operation and maintenance manual of each good supplied under the contract in English language, containing descriptions, illustrations, sketches, drawings, sectional drawings, sectional arrangement view and manufacturers' parts numbers to enable the connections, functions, operation and maintenance of all components of the equipment to be easily followed and for all parts to be easily identified to facilitate ordering of the replacement parts. Exploded views where appropriate shall be used for clarity.

The operation manual shall also include the following:

- Technical data of each good and their performance.
- Instructions for servicing and overhauling.
- Particulars of lubricating oil and grease to be used, also alternative indigenous commercial lubricating oils suitable for use.
- List of tools mounted on wall panels.
- List of spares.
- List of the photographs of the equipment as fabricated by the manufacturer.

#### 5.0 Guarantee

The Supplier shall guarantee all goods supplied under the Contract to be suitable for the application for which it is designed, and against defects due to manufacture or poor workmanship for a period of minimum **12 months** from the date of commissioning. The Supplier shall be responsible to rectify and replace free of cost the whole equipment or parts thereof which may be found defective during this period, and to ensure the proper working of the equipment during the guarantee period in accordance with Clause 28 of General Conditions of Contract and clarification in Special Conditions of Contract.

#### 6.0 Quality assurance system to be followed at manufacturer's works

Successful Bidder shall furnish detailed Quality Assurance Programme and Quality Plan for all materials and accessories to be supplied and installed under the scope of work. The Quality Plans shall include all tasks /checks as per the relevant Standards and the requirements of this specification.

The Supplier shall ensure that the manufacturer must have a proper setup and independent procedure in quality control with adequate equipment, facilities and personnel for this purpose to ensure quality control from procurement of materials and selection of sub-suppliers to incoming inspection, stage inspection and final inspection.

The Supplier shall further ensure that the equipment ordered are subject to check at any time by

purchaser's representative or by representative of inspecting authority deputed by the purchaser. Proper written record of quality assurance system must, therefore, be kept by the manufacturer which would be subject to checking.

### **6.1 Manufacturer's Test Certificate:**

Manufacturer's test certificate including Material test certificates should be submitted by the Supplier to the Employer.

### **7.0 Testing by Third Party Agency**

Any agency among the agencies appointed or authorized by the Employer may undertake independent third party inspections and testing during the manufacture or assembly of the equipment as may be applicable. Prior to commencement of the works the Engineer, in consultation with the Employer, shall inform the supplier of the name of the firm(s) who will be authorized to conduct independent Third Party inspections on the employer's behalf. The Contractor shall be wholly responsible to make his own arrangements with the approved third party inspection agencies for carrying out the required tests. The Contractor shall be responsible to obtain permission for and provide all facilities to such agency for carrying out such inspections or testing as may be required. The Third Party Inspection charges of the agency only will be paid by the employer and all the other costs for such independent inspection and testing shall be borne by the contractor.

A quality assurance plan will be developed which provides for inspection and certification by the third party inspection agency at specified times during the manufacture and fabrication of such items. Third party inspection agency's charges will initially be paid by the contractor which shall be reimbursed by the Employer. Bidder shall make necessary arrangements for third party inspections at manufacturers site and cost (other than inspection agency's fees) towards such arrangements shall be borne by the bidder and will not be reimbursed by the employer.

### **8.0 Rejection**

The Employer or Employer's representative reserves the right to reject any good under this contract if the same does not meet the specifications, requirements, subject to tolerances. The rejected good under this contract shall be replaced by new good under this contract complying with the requirements of the specification at the bidder's cost. If the commissioning of the project is likely to be delayed by the rejection good, the Employer's Representative reserves the right to accept the rejected good under this contract until the replacement of new good under this contract is made available. Transporting the rejected and replacement of good as well as installation and commissioning of both the good shall be at the bidder's cost.

## **9.0 Trial Run & Maintenance of the Equipment & Training Employer's Personnel**

After testing and commissioning of each good supplied under this contract at site, the bidder shall run the equipment for at least 8 hours at full load to demonstrate satisfactory performance to the Engineer in charge prior to taking over by the employer and train the employer's personnel for running independently in the future. The cost towards bidder's engineer and other operating personnel during the said period of trial run, along with cost of fuel, lubrication, tools and spare parts which are required for operation of the equipment during the trial run period, shall be borne by the bidder. In the event that the good supplied under this contract does not satisfactorily achieve the required performance standards during this period, the trial run period shall be extended until such time as the bidder has rectified any deficiencies as may be necessary to satisfy the performance requirements. No additional compensation will be paid to the bidder for such extension.

The contractor has to carry out routine and preventive maintenance as per manufacturer's standards for a period of **12 months** from the date of handing over. However, all consumables (fuel / lube oil etc.) and spare parts including filters will be supplied by the department.

## **10.0 Approval of Drawing**

The supplier will prepare and submit the GA and fabrication drawings of all the goods to be supplied under this contract before commencement of fabrication and procurement. The drawings will be reviewed and commented/ approved by the employer. Supplier will fabricate as per approved drawings.

All the technical data specifications of all the goods to be supplied under this contract shall be submitted by the successful Bidder for approval prior to procurement.